# Clemson IPM Program Newsletter

June 2022 Issue #9

Integrated pest management is an ecologically-based approach to managing pests with an emphasis on using multiple management strategies. The principles of IPM can be applied to any pest of food or fiber production systems, landscapes, and urban environments. IPM considers multiple control tactics with the aim of minimizing selection pressure on one given tactic.

The Clemson IPM program (https://www.clemson.edu/extension/ipm/index.html) seeks to increase adoption of IPM practices in South Carolina by developing interdisciplinary, research based information, and providing it to the public in efficient and accessible formats. The goals of the IPM program are driven by the needs of stakeholders, who have an integral part in developing the priorities of the current program.

The Clemson IPM Newsletter will provide updates on research, extension programs, successes in IPM, important dates, and more!

**@IPM_Clemson**

Follow the Clemson IPM program on Twitter for real time updates throughout the growing season

## Meet the Team

The IPM program at Clemson is comprised of the coordination team, extension personnel, and researchers throughout the state.

**Pee Dee REC**
Francis Reay-Jones, *Field Crop Entomology*
JC Chong, *Specialty Crop Entomology*
Joe Roberts, *Turfgrass Pathology*
Ben Powell, *Pollinator Specialist*

**Coastal REC**
Tony Keinath, *Vegetable Pathology*
Matt Cutulle, *Vegetable Weeds*
Brian Ward, *Organic Vegetable*

**Edisto REC**
Jeremy Greene, *Field Crop Entomology*
Mike Marshall, *Field Crop Weeds*
Dan Anco, *Peanut Specialist*
John Mueller, *Field Crop Pathology*

**Clemson Main Campus**
Guido Schnabel, *Fruit Crop Pathology*
Juan Carlos Melgar, *Pomology*
Steve Jeffers, *Ornamental Crop and Tree Pathology*

**UGA, Athens**
Brett Blaauw, *Peach Entomologist*

**Coordination Team**
Francis Reay-Jones, *Program Coordinator*
Tim Bryant, *Associate Program Coordinator and Newsletter Editor*

## Tell us what you think...

**Please take a few minutes to fill out this survey to tell us what you would like to see in future editions of this newsletter!**

Partial support for the Clemson IPM Program is provided by funding from the USDA NIFA Crop Protection and Pest Management Extension Implementation Program.

# Peanut Late Leaf Spot Management: How much leaf loss is too much?

Contributing author: **Dr. Dan Anco**

*Symptoms of late leaf spot in peanut*

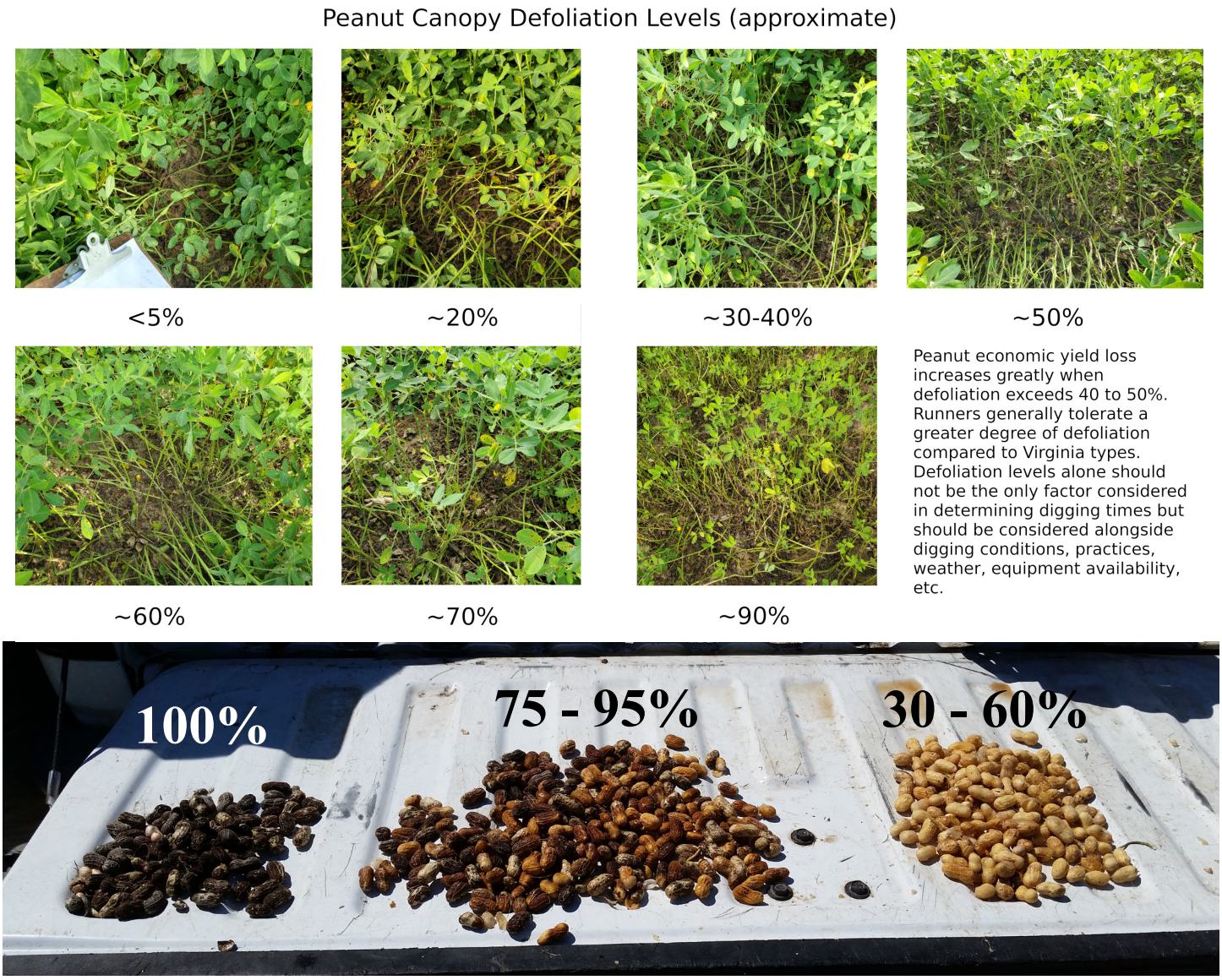
Late leaf spot of peanut is an endemic fungal disease in South Carolina and surrounding peanut production regions and is capable of causing significant economic losses. Symptoms following infection first become apparent as black lesions that can increase in size and number. Advanced infections can cause the plant to defoliate. This in turn weakens the peanut plant and leads to an increased amount of pod loss during digging, which can exceed 50% under favorable conditions when not managed effectively. Integrated management of late leaf spot combines the use of host resistance, cultural practices such as planting date, tillage, and crop rotation (3 or more years out of peanut before returning to peanut), strategic use of fungicides, and monitoring canopy condition for yield preservation. Peanut Rx is one tool that has been developed to help in the visualization of the combined effect associated with different management practices with regard to the risk of diseases such as late leaf spot.

Dr. Dan Anco, a peanut specialist at Clemson's Edisto Research and Education Center, works on integrated management of peanut diseases including late leaf spot. "As we approach and pass through the end of June, many fields have by now received one fungicide application for the 2022 growing season, with earlier planted fields having received two" Anco said. Traditionally, the start of the fungicide program for management of late leaf spot in SC has been near the 45 day after planting mark. In areas or production environments of higher disease pressure (e.g., contributed by such factors as late planting near the end of May through early June, the presence of a susceptible variety, two or less years of rotation between peanut crops, or volunteer peanuts nearby), benefits can be seen following initiating the fungicide program nearer 30 days after planting. Many fungicides are available for use in an overall effective program for managing late leaf spot. As with many diseases, the emphasis is on preventing development rather than attempting to eradicate the disease once it becomes established. Relative efficacy of individual fungicides are listed in the Peanut Money-Maker 2022 Production Guide on page 57.

A question that often comes to mind near the end of the growing season as we start to determine when to dig and invert each field, for peanut fields infected with late leaf spot, is how much defoliation is tolerable before we risk substantial yield loss? Further, would this amount change based on whether or not the crop is not yet at optimal maturity? To address these questions, Dr. Anco worked with a team across Virginia and the Carolinas and southeast peanut production regions to compile and sift through data collected over the years. (full report available here).

While there was some variation, results reported a significant and increasing trend in yield loss as defoliation increased. The specific amount of loss increase was slightly different depending on which peanut market type was being examined. Virginia market type (these are the larger peanuts that are commonly used as ballpark peanuts roasted in-shell) varieties increased loss more quickly, with losses becoming significant when 25% or more defoliation had occurred. Runner market type (e.g., peanuts used for peanut butter) losses increased overall more gradually, becoming significant when 30% or more defoliation occurred.

Since the peanut plant has an indeterminate fruiting manner, meaning it continues to flower and produce new pegs and pods as the season progresses... (cont. page 3)




*Top; Varying levels of canopy deolation in peanut. Bottom; Relative pod weights compared to weight potential when at optimal maturity*

determining overall optimal maturity when the majority of the harvestable crop is most near fully mature pods (those that exhibit black to very dark brown hulls after the outer exocarp layer is scratched or blasted away through the use of a pressure washer) is influenced by several factors. Cooler growing conditions and drought stress can both impede maturity development, and the presence of substantial defoliation can further affect how much of the produced crop can actually be harvested. In the presence of defoliation, results indicated that Virginia type peanut increase loss quicker than they would otherwise increase pod weight potential once defoliation reaches about 40%. Runner type peanut were able to sustain greater amounts of defoliation before increasing overall losses, with a conservative threshold being about 50% defoliation. Harvest time for peanut in South Carolina is no stranger to inclement weather. When heavy late season rains or tropical storms come in, this can delay field operations anywhere from a few days to several weeks. As a result, we are prudent when scheduling harvest operations to take the current and future weather forecast into consideration. This being said, while the defoliation thresholds developed from this work are informative and may be used to help guide harvest decisions, they are best when used a general rules of thumb, taking into account the conditions that are present within each field near the time of harvest, as well as conditions that would be present between digging and combining.

# Economic impact of redheaded flea beetle in ornamental plant nurseries

Survey of ornamental producer provides insight for future research on the managment of redheaded flea beetles

Contributing Author: **Dr. JC Chong**

*Injury caused by redheaded flea beetle feeding*

Redheaded flea beetle, *Systena frontalis*, feed on multiple horticultural and agronomic crop species, including corn, blueberry, soybean and potato, as well as many weed species. While it is generally considered a minor or occasional pest of agronomic crops, it is a major pest in ornamental plant production in the eastern US and in cranberry production in the Midwest. Redheaded flea beetles have highly enlarged and muscular hind legs, which allow them to cover a large distance by jumping like a flea. It has shiny blueish black body with a red head. The combination of its jumping habit and the red head give this species its common name. Adults feed on leaves and create shotholes. Severe foliar damage can reduce photosynthesis and yield of cranberry and appearance and sale value of ornamental plants. When this type of injury occurs, ornamental plant growers often have to delay sale of these plants, prune them and wait for them to reflush, thus, missing the window of most profitable sales and increasing production costs with increased fertilization and irrigation to promote reflush. Additionally, growers have to spray almost weekly from April to October to prevent foliar damage, which increase costs of insecticides and labor. The larvae of redheaded flea beetle feed on roots of ornamental plants but their impacts on plant growth and quality are unknown.

Dr. JC Chong, an ornamental entomologist at Clemson's Pee Dee Research and Education Center, and Dr. Shimat Joseph of the University of Georgia recently received a grant from the Southern IPM Center to form a working group on redheaded flea beetle. Members of the working group include researchers, extension specialists and agents, ornamental plant growers, landscape care professionals, grower organization representatives, and pest management product manufacturers and their representatives from 14 states spanning from New York to Florida and Texas. The working group provides a platform for members to discuss and develop management programs, to coordinate research projects, and to support the application of research and extension grants for redheaded flea beetle in ornamental plant production.

The first step in tackling redheaded flea beetle is to quantify the economic impacts of this pest species. A survey was developed and distributed to growers, landscape care professionals, retail garden operators, extension personnel and industry partners via trade organization listserv, newsletters and other media. (cont. page 5)

*Redheaded flea beetle adult*

The survey asked participants to answer questions on operation (location, type, etc.), pest status of redheaded flea beetle (plant species or cultivar damaged, estimated losses, management costs, etc.), and common management practices.

Seventy-five responses were received from 19 US states (including one report from Washington state; most reports were from Minnesota and Vermont south to Louisiana and Georgia) and one Canadian province, of whom 83% were wholesale nursery growers. Among the survey respondents, 72% reported recurring yearly infestations in the past 10 years. Survey respondents documented attacks on 36 ornamental plant species but hydrangea, itea, weigela, holly and rose were the most commonly attacked groups.

Ninety-five percent of survey respondents manage adult and larval damage and population; 89% of these respondents reported to use mainly insecticides for management. The most commonly used insecticides were (in the descending order of usage) neonicotinoids, carbaryl, pyrethroids, organophosphates, and diamides. Fifty-four percent of respondents reported that they do not have sufficient number of effective insecticides for redheaded flea beetle management. Among the large growers (i.e., more than 49 acres in production and $2 million in sales), 61% expressed their desire for more insecticides for management. Fifty-four respondents provided information on the cost of management. Based on the reported cost of control, we estimated that the annual cost of management against redheaded flea beetle in ornamental plant nurseries was $1,637 per hectare or about $680 per acre. The estimated cost of management will be used to justify future grant applications by the working group.

# Clemson's Coastal Research and Education Center Hosts Annual Field Day

Clemson's Coastal Research and Education Center hosted their annual field day on June 8, 2022. The field day was attended by growers, industry members, and members of the Charleston community. Attendees were given a tour of the research center, updates on herbicide, insecticide, and fungicide programs, updates on new techniques for organic vegetable production, and a sponsored lunch. Clemson researchers including Dr. Anthony Keinath, Dr. Matthew Cutulle, Dr. Brian Ward, Dr. Tom Bilbo, and Dr. Sandra Branham all provided updates on on-going research projects benefitting vegetable growers in South Carolina. Additionally, Scott Graule, the director of James Island Outreach, summarized the Coastal REC's produce donations to the community. Clemson Public Service and Agriculture was on site for the field day and produced a video featuring Clemson Extension agent Zack Snipes and a 9th generation vegetable grower in the Charleston area. View the video from the field day **here**.